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(54) Avoidance of spurious emissions from xDSL transmission

(57) To avoid spurious energy radiation from a wireline communication resource (42-44) supporting data over voice, such as in xDSL, modems (40, 46) supporting a multi-carrier transmission scheme undertake a line balance assessment (136-138) for each sub-channel carrier within the system. Specifically, an addressed modem (40) measures, for example, the signal to noise ratio of a differential transmission mode and a common transmission mode to provide the balance assessment (138). More particularly, a receive chain in the addressed modem is selectively switched (84) to receive

the differential mode as appearing across the terminals of an isolation transformer (66) or the common mode (as seen with respect to ground) from a centre tap (88) in a line-side winding (70) of the isolation transformer (66). Any sub-channel carrier that fails to provide a pre-determined level of balance (140) is de-selected (141) by the modem and not used for traffic. Generally, the modems (40, 46) at both ends of the wireline connection (42-44) notify one another of selected sub-channels, while the concept can be employed in a dynamic in-call fashion (152, 158-160).

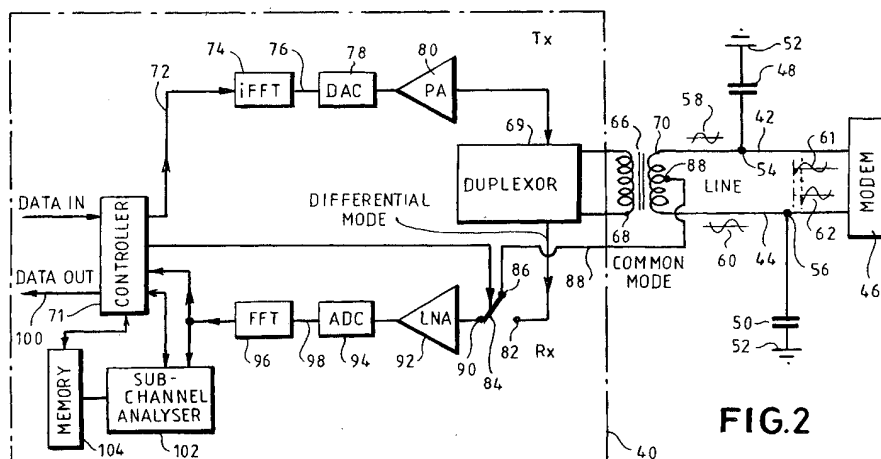


FIG.2



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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	SJOEBERG ET AL: "Digital RFI suppression in DMT-based VDSL sysetems" IEEE INTERNATIONAL CONFERENCE ON TELECOMMUNICATIONS, 21 - 25 June 1998, pages 189-193, XP001014258 New York, US * page 189, right-hand column, paragraph 5 *	1,15,29	H04L27/26
A	--- US 5 778 048 A (GEUN-HO KIM) 7 July 1998 (1998-07-07) * abstract *	1,15,29	
A	--- WO 97 40608 A (AMATI COMMUNICATIONS) 30 October 1997 (1997-10-30) * page 9, line 11 - line 16 *	1,15,29	
T	--- STOLLE R: "ELECTROMAGNETIC COUPLING OF TWISTED PAIR CABLES" IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS, vol. 20, no. 5, June 2002 (2002-06), pages 883-892, XP001143155 -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			H04L H04B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 5 June 2003	Examiner Scriven, P
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
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ON EUROPEAN PATENT APPLICATION NO.**

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05-06-2003

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5778048	A	07-07-1998	KR	143113 B1	01-08-1998
			CN	1148305 A ,B	23-04-1997
			RU	2118048 C1	20-08-1998

WO 9740608	A	30-10-1997	US	6014412 A	11-01-2000
			AU	727612 B2	14-12-2000
			AU	2461897 A	12-11-1997
			AU	727491 B2	14-12-2000
			AU	3054797 A	12-11-1997
			CA	2251887 A1	30-10-1997
			CA	2251946 A1	30-10-1997
			CN	1229553 A	22-09-1999
			DE	69714241 D1	29-08-2002
			DE	69714241 T2	20-02-2003
			DE	69720436 D1	08-05-2003
			EP	0894364 A1	03-02-1999
			EP	0894390 A1	03-02-1999
			JP	2000509577 T	25-07-2000
			JP	2001527704 T	25-12-2001
			KR	2000010536 A	15-02-2000
			KR	2000010537 A	15-02-2000
			WO	9740587 A1	30-10-1997
			WO	9740608 A1	30-10-1997
			US	6456673 B1	24-09-2002
			US	5995567 A	30-11-1999
			US	2001026602 A1	04-10-2001
			US	2001028692 A1	11-10-2001
			AU	2675397 A	12-11-1997
			EP	0894389 A1	03-02-1999
			JP	2000509578 T	25-07-2000
			KR	2000010535 A	15-02-2000
			WO	9740609 A1	30-10-1997
			US	6035000 A	07-03-2000

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82